

decomponents into the living Bladder." By S. Elliott Hoskins, M.D. Communicated by P. M. Roget, M.D., Sec. R.S.

The object of these researches was the discovery of some chemical agent, more energetic in its action on certain varieties of human calculi, and less irritating when injected into the bladder, than any of the fluids hitherto employed.

These indications not being fulfilled by dilute acids, or other solvents which act by the exertion of single elective affinity, the author investigated the effects of complex affinity in producing decomposition, and consequent disintegration, of vesical calculi.

For this purpose an agent is required, the base of which should unite with the acid of the calculus, whilst the acid of the former should combine and form soluble salts with the base of the latter. The combined acids would thereby be set free in definite proportions, to be neutralized in their nascent state, and removed out of the sphere of action, before any stimulating effect could be exerted on the animal tissue.

These intentions the author considers as having been fulfilled by the employment of weak solutions of some of the vegetable super-salts of lead; such as the supermalate, saccharate, lactate, &c. The preparation, however, to which he gives the preference, is an acid saccharate, or, as he calls it, a *nitro-saccharate of lead*.

The salt, whichever it may be, must be moistened with a few drops of acetic, or of its own proper acid, previous to solution in water, whereby alone perfect transparency and activity are secured. He furthermore states, that the decomposing liquid should not exceed in strength one grain of the salt to each fluid-ounce of water, as the decomposing effect is in an inverse ratio to its strength.

Having by experiments which are fully detailed ascertained the chemical effects of the above class of decomponents on calculous concretions *out* of the body, the author briefly alludes to the cases of three patients, in each of whom from four to eight ounces of these solutions had been repeatedly, for weeks together, introduced into the bladder, and retained in that organ without inconvenience for the space of from ten to fifty minutes.

It not being the intention of the author to enter into the medical history of these cases, he merely cites the above facts as sufficient to establish the principle originally laid down; namely, chemical decomposition of phosphatic calculi, by means of solutions so mild as to be capable of retention in the living human bladder without irritation or inconvenience.

2. "A Method of proving the three leading properties of the Ellipse and the Hyperbola from a well-known property of the Circle." By Sir Frederick Pollock, Knt., F.R.S., Her Majesty's Attorney General. Communicated in a letter to P. M. Roget, M.D., Secretary to the Royal Society.

In this communication, the author first demonstrates the well-known property of the circle, that if from a point in the diameter produced there be drawn a tangent to the circle, and from the point

of contact there be drawn a line perpendicular to the diameter; and if from any point in the circumference there be drawn two lines, one to the point without the circle, and another to the foot of this perpendicular, the former of these lines will be to the latter, as the distance of the point without the circle from the centre, is to the radius of the circle. By means of this property, and assuming that the ellipse is the curve whose ordinate, at right angles to its axis, is to the corresponding ordinate of the circle, described upon this axis as a diameter, in a constant ratio, the author proves the following propositions relating to this curve:—

1. The rectangle of the abscissæ is to the square of the ordinate, as the square of the semiaxis major to the difference of the squares of the semiaxis major and the excentricity.

2. The distance of any point in the curve from the focus, is to its distance from the directrix, as the excentricity is to the semiaxis major.

3. The sum of the distances of any point in the curve from the two foci is equal to the axis major.

By a method nearly similar to that employed for the ellipse, and assuming that the hyperbola is a curve in which the rectangle of the abscissæ is to the square of the ordinate, as the square of the ordinate in a circle, described upon the axis major as a diameter, is to the square of the subtangent, the author shows, first, that the distance of any point in the curve from the focus is to its distance from the directrix, as the distance between the foci is to the axis major; and secondly, that the difference of the distances of any point in the curve from the two foci is equal to the axis major.

3. "On the diurnal Temperature of the Earth's surface, with the discussion of a simple formula for ascertaining the same." By S. M. Drach, Esq., F.R.A.S. Communicated by John Lee, Esq., LL.D., F.R.S.

The author investigates the several causes which influence the daily temperature of any point at the earth's surface. He employs the term *Thermal establishment* to denote the retardation of the effects of solar light caused by atmospherical conduction and by local circumstances, in the same manner that the term *Tidal establishment* has been used to express the local constant by which the astronomical effects on the waters of the ocean are delayed. After explaining the formation of the tables and diagrams given at the end of the paper, and detailing the conclusions derivable from them, the author enters into a review of the perturbing causes, investigates the analytical expression for the daily heat, and concludes with some observations on isothermal lines, on the influence of the friction resulting from the rotation of the earth about its axis, and on the agency of electricity.

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